

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 6-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. With respect to the claim limitation as to claim 6 discussing a "variation in the pitch of an end portion of a corresponding end turn bearing against said at least one support is negative or zero," it is not completely clear what this limitation is referring to as no frame of reference is given to determine how to decide if the pitch is negative or zero as claimed. Accordingly, this claim will be rejected as best understood.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 6-10 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over GB 313,896 [cited by applicant] in view of Bottene et al. (U.S. 6,883,790 B2).

GB 313,896 discloses a vehicle suspension including a subassembly constituted by a coil spring (Figs. 1-2 and 5-6, and Elements 13) mounted to bear between two

supports (Figs. 1-2 and 5-6, Elements 14) of variable spacing, wherein at least one support among said two supports is constrained to move along a trajectory that is curved relative to the other support among said two supports (Figs. 1-2 and 5-6, note pivot points (Element 5), which would necessitate a curved trajectory).

It is not clear whether GB 313,896 discloses that the variation in the pitch of an end portion of a corresponding end turn bearing against said at least one support is negative or zero, because as discussed above it is not clear what these terms mean.

In the event that this is not disclosed Bottene discloses the use of a coil spring for a vehicle having what is understood to be a variation in the pitch of an end portion of a corresponding end turn bearing against said at least one support is negative or zero.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified GB 313,896, to utilize the limitation of a variation in the pitch of an end portion of a corresponding end turn bearing against said at least one support is negative or zero, or at least what this limitation may be (see 35 U.S.C. 112(2) rejection above), in view of Bottene, so as to achieve the desirable result of having a spring that is more able to withstand lateral forces which would occur during the motion of the trailing arm disclosed by GB 313,896.

With respect to claim 7, the combination of GB 313,896 as modified in view of Bottene, further discloses that said end turn is off-center relative to a general axis of said spring.

Regarding claims 8 and 9, the combination of GB 313,896 as modified in view of Bottene, also discloses that said end turn is of a diameter smaller than a mean diameter of other turns of said spring adjacent to said end turn (note end portion at fig. 5).

With respect to claim 10, the combination of GB 313,896 as modified in view of Bottene, further discloses that said end turn is substantially tangential to a cylinder defined by said other turns when said spring is in a non-stressed state (Figs. 1-5, note particularly end shown in Fig. 5).

5. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of GB 313,896 as modified in view of Bottene (U.S. 6,883,790), as applied to claims 6-10 above, and further in view of Tachikawa et al. (U.S. 5,092,568). The combination of GB 313,896 as modified in view of Bottene discloses all of the limitations of claims 11 and 12 except for the at least one support including a stud shaped and dimensioned so as to fit in said end turn. Tachikawa discloses the use of a spring support that includes a stud shaped and dimensioned so as to fit in said end turn (Figs1-3, Elements 15-16). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the combination of GB 313,896 as modified in view of Bottene, such that said at least one support includes a stud shaped and dimensioned so as to fit in said end turn, in view of Tachikawa, so as to ensure that the suspension is not damaged in the event of a situation where suspension travel beyond that expected under normal design conditions occurs [for instance the driver mistakenly drives into a ditch or goes off the road due to ice, etc.], by

providing an extra level of protection which would prevent the spring from being moved out of alignment or otherwise removed from one or both of the spring supports.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:
 - a. Noll Jr. (U.S. 5,310,167) discloses a tapered coil spring that may be of interest to the applicants,
 - b. Hasegawa et al. (U.S. 6,375,174 B2) discloses a curved helical compression spring, which may be of interest to the applicants.
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Rocca whose telephone number is 571-272-5191. The examiner can normally be reached on 8:30 AM to 5:00 PM, Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lesley Morris can be reached on 571-272-6651. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Christopher P Ellis/
Supervisory Patent Examiner, Art
Unit 3618

/Joseph Rocca/
Examiner, Art Unit 3616